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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,220	04/02/2001	Yoshio Kajiura	0020-4829P	1095

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EXAMINER
TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/822,220	KAJIURA ET AL.
	Examiner	Art Unit
	Susy N Tsang-Foster	1745

-- Th MAILING DATE of this communication appears on th cover sheet with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,2 and 5* is/are allowed.

6)☒ Claim(s) *3 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/14/2003 has been entered.

Response to Amendment

2. This Office Action is responsive to the amendment filed on 8/14/2003. Claims 1-5 have been amended. Claims 1-5 are pending. Claims 1, 2, and 5 are allowed. Claims 3 and 4 are rejected for reasons given below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 709906 A1 in view of Kamauchi et al. (US 5,538,814).

EP 709906 A1 discloses a process for producing a positive electrode for a secondary battery comprising the steps of:

mixing 0.5 mol lithium carbonate (a lithium compound) and 1 mol of cobalt carbonate and sintering (calcining) the raw material mixture in air (an oxidizing atmosphere) at a temperature of 900 degrees Celsius for 5 hours to produce $LiCoO_2$ (which is a calcined powder) which was then ball-milled to powders with a mean size of 10 microns (page 5, lines 30-35);

forming the $LiCoO_2$ powders to a pellet shaped electrode after polyethylene powders were mixed in;

calcining (baking) the pellet (formed calcined powders) air (an oxidizing atmosphere) at a temperature of 900 degrees Celsius for 3 hours to produced a sintered mass of $LiCoO_2$ (a porous sintered positive electrode) that is 15.5 mm in diameter with a volumetric density of 3.1 g/ml (page 5, lines 35-40).

EP 709906 A1 generally teaches that the calcining temperature for forming the calcined powders from a raw material containing a lithium compound in an oxidizing atmosphere is in the range of 350 to 1000 °C and that the baking temperature for the shaped raw electrode utilizing the calcined powders is preferably not lower than 500 °C. Hence, calcined powders formed below 500 °C can be used in the shaped raw electrode as long as the baking temperature for the shaped raw electrode is preferably not lower than 500 °C.

EP 709906 A1 also discloses a process for producing a sintered positive electrode for a secondary battery, the process comprising:

calcining a raw material containing a lithium compound under an oxidizing atmosphere to produce calcined powders (page 4, lines 8-9 and page 3, lines 26-30 and lines 33-35);

forming the calcined powder to a shape of an electrode after incorporating a binder and current collector to form a shaped raw electrode (page 3, lines 3-6 and lines 57-59);

and calcining the shaped raw electrode to remove the binder material to convert the raw electrode into a porous sintered electrode (page 3, lines 3-6 and page 4, lines 3-5). The binder can be polyethylene powders (page 5, lines 36-39).

If the temperature for calcining is set higher than 660 °C when the current collector is molded into the raw electrode, the temperature for calcining the raw material containing a lithium compound to produce the calcined powders is set lower than 660 °C (see page 4, lines 3-9).

However, EP 709906 A1 does not disclose that the polyethylene powders used as a binder have a diameter of 0.1 to 100 microns.

Kamauchi et al. teach that the binder in a formed positive electrode has a particle size of 0.02 through 20 times that of the oxide powder of the positive electrode which prevents large, irregular pores from being formed in the positive electrode and allows for pores of appropriate dimensions to be formed in the positive electrode and formation of the appropriate pores

increases the capacity of the positive electrode, prevent cracks and defects and improves the formability into a positive electrode.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use polyethylene powder having a particle size of from 0.2 microns to 200 microns in forming the molded positive electrode product of EP 709906 A1 prior to sintering the molded positive electrode product to form the sintered porous positive electrode because a binder that is 0.02 to 20 times the particle size of the oxide of the positive electrode allows for allows for pores of appropriate dimensions to be formed in the positive electrode and formation of the appropriate pores increases the capacity of the positive electrode, prevent cracks and defects and improves the formability into a positive electrode.

Response to Arguments

5. Applicant's arguments with respect to claims 3 and 4 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

6. Claims 1, 2, and 5 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Friday from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/ Susy Tsang Foster

Susy Tsang-Foster
Primary Examiner
Art Unit 1745